What we claim is,

1. An oxygen doping method to a gallium nitride single crystal substrate, comprising the steps of:

preparing a non-C-plane gallium nitride single crystal seed having a surface except C-plane,

supplying the non-C-plane gallium nitride seed with material gases including a gallium material, a nitrogen material and an oxygen material without silicon,

growing a gallium nitride bulk crystal upon the non-C-plane gallium nitride seed in vapor phase,

maintaining the non-C-plane surface on the growing gallium nitride bulk crystal, and

doping the growing gallium nitride bulk crystal with oxygen via the non-C-plane surface.

2. The method according to claim 1, wherein the non-C-plane surface is {kk-2kh} planes (k,h; integer) and the {kk-2kh} planes are maintained during the growth as the surface of the growing gallium nitride bulk crystal for doping the crystal with oxygen via the {kk-2kh} planes.

3. The method according to claim 1, wherein the non-C-plane surface is {k-k0h} planes (k,h; integer) and the {k-k0h} planes are maintained during the growth as the surface of the growing gallium nitride bulk crystal for doping the crystal with oxygen via the {k-k0h} planes.

4. The method according to claim 2, wherein the non-C-plane surface is {11-20} planes (A-planes) and the {11-20} planes are maintained during the growth as the surface of the growing gallium nitride bulk crystal for doping

the crystal with oxygen via the {11-20} planes.

5. The method according to claim 3, wherein the non-C-plane surface is {1-100} planes (M-planes) and the {1-100} planes are maintained during the growth as the surface of the growing gallium nitride bulk crystal for doping the crystal with oxygen via the {1-100} planes.

6. An oxygen doping method to a gallium nitride single crystal substrate, comprising the steps of:

preparing a foreign material single crystal seed having three-fold rotational symmetry or a C-plane gallium nitride single crystal seed having a C-plane surface,

supplying the foreign material seed or the C-plane gallium nitride seed with material gases including a gallium material, a nitrogen material and an oxygen material without silicon,

growing a gallium nitride bulk crystal with facets having non-C-planes upon the foreign material seed or the C-plane gallium nitride seed in vapor phase,

maintaining the facets having the non-C-planes on the growing gallium nitride bulk crystal, and

doping the growing gallium nitride bulk crystal with oxygen via the non-C-planes of the facets.

7. The method according to claim 6, wherein the non-C-planes of the facets are {kk-2kh} planes (k,h; integer) and the {kk-2kh} planes are maintained during the growth as the facets on the growing gallium nitride bulk crystal for doping the crystal with oxygen via the {kk-2kh} planes.

8. The method according to claim 6, wherein the non-C-planes of the facets

are {k-k0h} planes (k,h; integer) and the {k-k0h} planes are maintained during the growth as the facets on the growing gallium nitride bulk crystal for doping the crystal with oxygen via the {k-k0h} planes.

9. The method according to claim 7, wherein the non-C-planes of the facets are {11-21} and {11-22} planes and the {11-21} and {11-22} planes are maintained during the growth as the facets on the growing gallium nitride bulk crystal for doping the crystal with oxygen via the {11-21} and {11-22} planes.

10. The method according to claim 8, wherein the non-C-planes of the facets are {1-101} planes and the {1-101} planes are maintained during the growth as the facets on the growing gallium nitride bulk crystal for doping the crystal with oxygen via the {1-101} planes.

11. An oxygen doped n-type gallium nitride freestanding single crystal substrate having oxygen atoms as an n-dopant and a non-C-plane surface, produced by the steps of:

preparing a non-C-plane gallium nitride single crystal seed having a surface except C-plane,

supplying the non-C-plane gallium nitride seed with material gases including a gallium material, a nitrogen material and an oxygen material without silicon,

growing a gallium nitride bulk crystal upon the non-C-plane gallium nitride seed in vapor phase,

maintaining the non-C-plane surface on the growing gallium nitride bulk crystal,

doping the growing gallium nitride bulk crystal with oxygen via the non-C-plane surface, and

eliminating the non-C-plane gallium nitride single crystal seed from the grown gallium nitride bulk crystal by etching or polishing.

12. The gallium nitride single crystal substrate according to claim 11, wherein the non-C-plane surface is {kk-2kh} planes (k,h; integer).

13. The gallium nitride single crystal substrate according to claim 11, wherein the non-C-plane surface is {k-k0h} planes (k,h; integer).

14. The gallium nitride single crystal substrate according to claim 12, wherein the non-C-plane surface is {11-20} planes.

15. The gallium nitride single crystal substrate according to claim 13, wherein the non-C-plane surface is {1-100} planes.

16. An oxygen doped n-type gallium nitride freestanding single crystal substrate having oxygen atoms as an n-dopant and a C-plane surface, produced by the steps of:

preparing a foreign material single crystal seed having a three-fold rotational symmetry or a C-plane gallium nitride single crystal seed having a C-plane surface,

supplying the foreign material seed or the C-plane gallium nitride seed with material gases including a gallium material, a nitrogen material and an oxygen material without silicon,

growing a gallium nitride bulk crystal with facets having non-C-planes upon the foreign material seed or the C-plane gallium nitride seed in vapor phase,

maintaining the facets having the non-C-planes on the growing gallium nitride bulk crystal,

doping the growing gallium nitride bulk crystal with oxygen via the

non-C-planes of the facets,

eliminating the foreign material seed or the C-plane gallium nitride single crystal seed from the grown gallium nitride bulk crystal by etching or polishing, and

polishing the faceted surface of the grown gallium nitride bulk crystal for eliminating the facets.

17. The gallium nitride single crystal substrate according to claim 16, wherein the non-C-planes of the facets are {kk-2kh} planes (k,h; integer) and the {kk-2kh} planes are maintained during the growth as the facets on the growing gallium nitride bulk crystal for doping the crystal with oxygen via the {kk-2kh} planes.

18. The gallium nitride single crystal substrate according to claim 16, wherein the non-C-planes of the facets are {k-k0h} planes (k,h; integer) and the {k-k0h} planes are maintained during the growth as the facets on the growing gallium nitride bulk crystal for doping the crystal with oxygen via the {k-k0h} planes.

19. The gallium nitride single crystal substrate according to claim 17, wherein the non-C-planes of the facets are {11-21} and {11-22} planes and the {11-21} and {11-22} planes are maintained during the growth as the facets on the growing gallium nitride bulk crystal for doping the crystal with oxygen via the {11-21} and {11-22} planes.

20. The gallium nitride single crystal substrate according to claim 18, wherein the non-C-planes of the facets are {1-101} planes and the {1-101} planes are maintained during the growth as the facets on the growing gallium nitride bulk crystal for doping the crystal with oxygen via the {1-101} planes.